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A

NEW METHOD

FOR

Copying Instantaneously,

WITHOUT MACHINES, AND
WITHOUT EXPENCE,

LETTERS, ACCOUNTS,

AND ALL OTHER

WRITINGS.

BY M. DEROK.

СОНЧЕМ

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СИА ВЪКИНОВЪ СОНЧЕМ
ЗОДЬ ДА ТЕЛІЧЕ

МОСКОВСКА

ЧЕНЕ ДЛЯ СИА

СОЧИЛЕ

ЗОДЬ ДА ЧУИ

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THE NEW METHOD

Entered at Stationers Hall.

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NEW METHOD, &c.

CHAPTER I.

SUMMARY AND ADVANTAGES OF THE NEW METHOD.

THE cylindrical machines invented of late years for copying writings are generally known and esteemed; they are not, however, in general use, and are confined to public offices and great commercial houses. What is the reason?— Is it because merchants, shop-keepers, students, &c. seldom find it necessary to keep a copy of what they have written?

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CHAPTER I.

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How

How happens it then that they are not provided with a cylindrical machine ? The reason is very plain : because it costs five or six guineas ; and these people not being daily in the habit of using them, are fearful of the expence of such an acquisition.

On the other hand, these machines, which are made in England, are, notwithstanding their utility, subject to certain inconveniencies, which prevent many people from using them. In fact, two sorts are made. One in order to be fixed up in offices ; they are in the form of a small table ; it is sufficient to fix them in a certain place, when they are always ready for use without any necessity for removing them. The other sort are made for travelling with ; they are in the form of a small chest, in which are contained all the pieces which constitute

sstitute the machine, namely, two copper cylinders, a handle, &c. When they are used, the chest must be first fixed to a table by means of two cramp-irons belonging to a vice. The machine is prepared by fixing each part in its place, and is taken to pieces when done with.

Thus it may be seen, that in order to make use of the former it is necessary to be in the house, and even in the room, where they are fixed. If one happens to be from home, they become useless ; and then the necessity of taking a copy one's self is the more irksome, as not being in the habit of it. In order to employ the latter, one must necessarily have the trouble of fixing them up and taking them down. This operation cannot but require both time and trouble ; to prevent which is the object in view.

In other respects both the one and the other become useless, if you happen to be unprovided with ink and paper applicable to them, and which are sold only by the patent makers of the machines.

These reflexions, which are not my own, but which I have heard whenever this ingenious invention has been the subject of conversation, have made me sensible of the importance of bringing it to perfection. I considered the question to be reduced to this :—
To discover a process which may produce the same effect as the copying machines already invented, but which may require no expence; which may be simply, easily, and speedily executed; and which may be used every where, without being under the necessity of carrying any apparatus with one.

In

In seeking the solution of this problem, it was necessary I should give up the idea of every mechanical construction, and of every complicated chemical preparation whether for ink or paper. Nevertheless, I could not well do without all these objects; for certainly a paper was required to receive the copy; a pure ink, which, without any appearance of superfluity whilst upon the original, might have the virtue of transferring a part of itself to the copy, retaining all it might want, so as to prevent the original from losing any thing. Above all, a powerful agent was required, such as might be procured any where, without expence and without trouble, and which might be used without labour.

I thought of fire:—in considering its important uses in the world, the astonishing,

nishing, and often contradictory effects which it daily produces before our eyes; I asked myself whether I could not make this element contribute to my purpose, and exact from it the service I required. I reflected;—I racked my thoughts;—I followed the usual mode in researches, that is to say, I began by the most complicated processes, till at last, after a thousand attempts, each more fantastical than the other, and which it would be very tiresome for the reader to find particularized here, my ideas being improved, I arrived at a result founded upon the greatest simplicity, as follows :

I prepared my ink in a manner which I shall presently explain. I wrote with this ink : when my writing was dry, I moistened a piece of blotting paper (it was silver paper, which had served as a

wrapper.

wrapper to a hat I had just received) I placed this paper upon my writing : I covered it again with some sheets of common paper—I ironed the whole with a hot iron ; and my copy was found to be made upon the blotting paper with all the exactness I could desire.

This process is certainly neither complicated nor difficult, and if it were not for the preparation of the ink, every one will allow that it is impossible to discover one more simple. I claim this acknowledgement from the reader before we proceed further, and I hope he will be just enough not to refuse it. Now, I say, that if the preparation of the ink be as easy as the operation, I may flatter myself with having attained the end I proposed, namely, the placing my invention within the reach of every one. But do you know, reader, in what
this

this great preparation consists? It is nothing more than a piece of refined white sugar dissolved in your ink-stand.

Try now yourself, and see whether it is as I have described. Observe whether I have accomplished my end. I announced a simple, easy, and speedy process, within every person's reach, which required neither expence nor the carriage of a machine. Now, certainly, a smoothing iron, a fire, and sugar, may be found in any house; blotting paper may be purchased at any shop; and the method of using these articles is so simple that a child may act with success.

CHAPTER

CHAPTER II.

PRINCIPLES UPON WHICH THE NEW
METHOD IS FOUNDED.

I FLATTER myself that the reader will not be offended if I here repeat the principles upon which this method is founded, and which served me as a guide. They are as follow :

Fire is a thin fluid which has the power of penetrating all bodies. This is one of its most generally acknowledged properties.

Every substance, whether solid or fluid, exposed to the action of fire, experiences a rarefaction in its mass, an augmentation in its size, a dilatation in all its parts, in such a manner that during

ring the heat it occupies a greater space.

If you place paper and water in contact, the particles of water, which are finer and less coherent than those of the paper, insinuate and lodge themselves in the pores of the latter, fill them, and keep them open, till they are forced away by some exterior cause.

If you place sugar and water in contact, the particles of sugar are so separated from each other and united with those of the water, that, together, they compose in appearance an homogeneous fluid. This union, which is called solution, is owing to a certain disposition of the parts of these two bodies, and to a certain degree of agitation necessary for uniting them to each other. In the ordinary state of things, wherein this agitation is nothing more than the imperceptible

perceptible movement experienced by the atmosphere and every thing surrounded by it, the solution is gentle and gradual. In order to accelerate the solution, this agitation need only be augmented. But fire may be employed with the most efficacy. It penetrates quickly, and divides and agitates strongly. We see also daily, that sugar melts quicker in agitated than in calm water, and consequently quicker in warm than in cold water.

By the solution, neither the water nor the sugar are decomposed : they are only united : they may both be easily separated and recovered. By exposing them to the action of fire, this universal and indefatigable agent first relaxes the cohesion of the parts which constitute the water, soon disunites them, combines itself with them, and, going off,

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carries

carries them with it in the form of
pours ; whilst the particles of sugar
which the solution kept suspended, be-
ing heavier and less volatile than the
water, remain settled, and obeying the
laws of attraction, draw near to each
other and unite, so as to appear again
in their solid form.

According to these principles, which
are universally known, it is easy to com-
ceive how and why the copy is pro-
duced. By applying the hot iron upon
the preparation, the heat immedi-
ately penetrates, and acts forcibly. The wa-
ter, which is in the pores of the blotting
paper, and the sugar which forms part
of the ink, are placed in contact and
agitation : the solution speedily di-
solves : the matter being dissolved,
rarefied by the heat, increases in size,
and requires a greater space, and seek-

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lodge itself: at the same instant, a part of the water contained in the blotting paper rises in vapour, and leaves a vacuum in the pores it quits, which the matter in solution is ready immediately to occupy. To this first displacing and replacing succeeds a second—then a third—then a fourth, and so on, till at last, all the water having disappeared by the evaporation, or rather, by the *vaporisation*, the sugar remains settled in the pores of the blotting paper, in a concrete form, and with the black tincture which the ink had communicated to it. But as all parts of the sugar must naturally have lodged in the pores exactly correspondent to them, it follows, that the whole quantity displaced must preserve the same order and the same disposition as it did previous to its removal; and, consequently, the copy

must represent the same objects as the original from which it has been taken.

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CHAPTER III.

ARTICLES NECESSARY IN ORDER TO
TAKE A COPY.

FROM what has been before said, it results, that the necessary articles for taking a copy according to my plan are reduced to the three following, viz. copying ink, copying paper, and a smoothing iron.

Copying Ink.

The ink with which you ought to write the articles of which you are desirous of taking a copy, is good common ink, to which you will add a little white refined sugar. It is impossible for me to determine the quantity of sugar to

be used ; that depends upon the quality of the ink. The only general rule I can give is, that when the sugar is well dissolved, and incorporated with the ink, the writing should appear very bright, but without making the ink too thick. In order to prevent its growing thick, be careful to cover your ink-stand after using it, which will exclude the air from having too great an effect.

If you but seldom make use of my method, it is not necessary to have a particular ink-stand with ink always prepared. When you want to write any thing of which you may wish to preserve a copy, you need only put a few drops of ink either upon a piece of paper or in the bottom of a cup or glass ; add thereto a little sugar ; it will dissolve immediately, and your ink will be fit for use.

Copying

Copying Paper.

In my experiments, I have used indiscriminately and with success, every kind of blotting paper that happened to fall in my way. I have found that to be the best which most speedily absorbs the ink : it matters but little whether it be thick or thin. Common writing paper, which had neither been sized nor glazed, always answered my purpose perfectly well. I suppose that when my method becomes public, the paper makers will be glad to sell such, without giving it any previous preparation ; and that, in a short time, the copying paper will be as common as paper of any other quality, both at the stationers and in private families.

In the mean time you may make use of a kind of thin paper which is generally,

nerally used for wrapping up jewellery, hats, and other articles of trade. You must make it into leaves of an equal size with those of the paper upon which you generally write. Or if you find this paper too thin, there is a very simple method for preparing common letter paper, and rendering it fit for receiving the copy : namely, by dipping it, and leaving it for a moment, in boiling water. By this operation, the size or isinglass with which it is covered dissolves ; the pores, which were full of it, become empty, and by that means are prepared for easy penetration. You may prepare a certain quantity at a time, and keep it by you for use whenever it is wanted.

The copy paper ought to be moistened previous to its being used. For this purpose, put about twenty sheets one upon another,

another, upon a piece of oil cloth, so large, that the edges in folding over may meet and cover the whole. Pour a certain quantity of clear water upon the paper, as much as in your judgment you may think necessary ; fold your cloth over, and let the water have sufficient time to penetrate. This is a small provision, to which you may have recourse at any time when you want to copy any thing.

Instead of the oil cloth, which I mention as an œconomical mode, you may keep your copying paper moist in a box or drawer of sufficient dimensions, which you may get lined with a thin plate of lead ; you may put your copy paper into it, and when it is moistened, cover it up with a board of the same size as the drawer, and of which the inner

ner surface should likewise be covered with lead.

If you have not frequent occasion to take copies this operation is unnecessary, and you may moisten one or more sheets at the time you want them. For this purpose you need only spread your copy paper upon another sheet of white paper, and moisten it with a wet sponge or brush ; or you may sprinkle a few drops of water upon it with your hand : you will very easily perceive when the moisture has penetrated all parts.

A Smoothing Iron.

This is an iron used in every house for ironing linen. Whenever you want to use it, heat it. In order to be certain that it has acquired the necessary degree of heat, you need only let a little saliva fall upon the inner surface. If the iron

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be sufficiently hot, the saliva will run off without leaving any trace. All women are acquainted with this experiment; nevertheless, I must observe, that it is essential that the iron should not be too hot, because then the evaporation will have taken place before the solution has had time to penetrate the copying paper.

CHAPTER

CHAPTER IV.

METHOD OF TAKING THE COPY.

SECT. I.

*When the Letter is written on a single
Page only.*

WHENEVER you wish to take a copy, observe exactly the following method :

1. Write your letter with sugared ink and upon good paper. Let it dry thoroughly; it matters not whether in the air or near the fire. You may wait a day, or longer, before you take your copy; but you ought never to proceed to take it till the original is quite dry.

2.

2. Spread your letter upon a table, so that the written page may be uppermost, and take care to put some sheets of paper underneath, as you usually do when you write. These sheets of paper form a kind of pad, which will favour the impression and render it more equal.

3. Take half a sheet of copying paper, moistened. If you fear it be too much so, put it between two sheets of common blotting paper, rather thick ; draw your hand over it, at the same time pressing it a little : the excessive moisture will be absorbed by the blotting paper, and the copying paper will remain such as it should be. This precaution will be useless, when experience shall have taught you the quantity of water you ought to use. However, I advise you not to use the copying paper

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too moist, for then the ink will spread too much, and the writing will not be distinct.

4. Place your half sheet of copying paper upon your letter. Observe that it be in a proper direction, and that there are no plaits; cover it with some sheets of common white paper, and hold the whole steadily with the left hand.

5. Take the hot iron in the right hand; apply it over the whole, beginning at the extremity towards the left hand: draw it gently to the opposite side, pressing rather strongly, and your copy is made.

6. Whilst you are using the iron, you should carefully observe, *1st*, to de-range nothing, without which the copy will be confused: *2dly*, To move the iron as equally as possible, in order that

all parts of the copy may receive an equal degree of heat, and that each may be marked as strongly as the other: *3dly*, To operate speedily, otherwise the copying paper will be dry before it is saturated. In fine, two or three trials will render you sufficiently capable of performing the operation.

7. Although your copy may be well taken in every part, I nevertheless advise you to continue ironing it till it is entirely dry. This advice is founded upon the following principle: *The vaporisation does not quicken in proportion to the evaporating surfaces, but in proportion to the quantities of heat which are combined with the liquid, and which escapes with it.* Whence it follows, that if you were to expose your copy to the cold air before it was dry, this cold air conveying a part of the heat to the water, would

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diminish its conversion into vapour, and would cause the ink to spread itself more than necessary.

SECTION II.

When the Letter is written upon several Pages.

IF your letter be written upon two pages, you must, after having spread it, as I have above mentioned, take a whole sheet of copying paper, place the half sheet of your letter, written upon two pages, in the middle of this sheet, and proceed as usual.

If the letter be written upon three pages, put half a sheet of copying paper upon the third page; cover it with half a sheet of white paper; continue
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the same directions for the first and second pages as though they were single, and proceed as usual.

If the letter be written upon four pages, take two whole sheets of copying paper, and, according to the above direction, apply one to the third and fourth pages; cover it with half a sheet of white paper, apply the other sheet of copying paper to the first and second pages, and proceed as usual.

N. B. Thus you may copy ten, twelve, or more pages at once, by preparing them in the same manner, and placing them one upon another. But you will observe, that then you must first prepare the whole speedily, in order that the copying paper may not have time either to dry, or to communicate its moisture

moisture to the ink: secondly, move the iron much slower, in order that the heat may have time to penetrate, and to act through the whole thickness of the apparatus.

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CHAPTER V.

METHOD OF PRESERVING THE
COPIES.

ACCORDING to the information I have received from several merchants, who have long been in the daily habit of using the cylindrical machines, it appears that the most convenient method for preserving the copies, which can seldom be taken but upon loose sheets of paper, is to treat them in the same manner as letters we receive, that is, to fold them in the middle from top to bottom; you will then write the date of the letter upon the back of it with a red pencil, as likewise the name of

of the person to whom it is addressed.
You will put them up in bundles which
you may preserve either in a drawer or
box.

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